depositing a first dielectric layer adjacent the barrier layer, wherein the dielectric layer comprises silicon, oxygen, and carbon and has a dielectric constant of about 3 or less.

2. The method of claim 1, wherein the dielectric layer has a carbon content between about 5 and about 30 atomic percent excluding hydrogen atoms.

3. The method of claim 2, wherein the dielectric layer is deposited by oxidizing an organosiliane or organosiloxane compound in a plasma enhanced chemical vapor deposition technique.

4. (Amended) The method of claim 1, wherein the barrier layer is deposited under plasma conditions comprising maintaining a substrate temperature between about 0°C and about 500°C, maintaining a chamber pressure below about 500 Torr, and applying an RF power of between about 0.03 watts/cm^2 and about 1500 watts/cm^2.

5. (Amended) The method of claim 1, wherein the barrier layer is treated with a plasma of an inert gas, a reducing gas, or combinations thereof, prior to depositing the first dielectric layer.

6. (Amended) The method of claim 1, further comprising depositing an etch stop layer on the first dielectric layer by reacting an organosilicon compound having the formula $SiH_a(CH_3)_b(C_6H_5)_c$, wherein a is 1 or 2, b is 1 or 2, and c is 1 or 2.

7. The method of claim 1, wherein the organosilicon compound comprises diphenylmethylsilane, dimethylphenylsilane, or combinations thereof.

8. (Amended) The method of claim 1, wherein the processing gas further includes a dopant component selected from the group of an oxygen-containing compound, a nitrogen-containing compound, a boron-containing compound, a phosphorus-containing compound, and combinations thereof.

9. The method of claim 8, wherein the oxygen-containing compound is selected from the group of oxygen, ozone, a siloxane, and combinations thereof.

10. The method of claim 8, wherein the nitrogen-containing compound is selected from the group of nitrogen gas, ammonia, a silazane, and combinations thereof.

11. The method of claim 1, wherein the processing gas further comprises an inert gas selected from the group of argon, helium, neon, xenon, or krypton, and combinations thereof.

12. (Amended) The method of claim 9, wherein the barrier layer comprises less than about 15 atomic percent of oxygen.

A4 cont'd.

13. (Amended) A method for processing a substrate, comprising:

depositing a barrier layer on the substrate by introducing a processing gas comprising an organosilicon compound into a processing chamber, wherein the organosilicon compound has the formula $SiH_a(CH_3)_b(C_6H_5)_c$, wherein a is 1 or 2, b is 1 or 2, and c is 1 or 2, and an oxygen-containing compound, a nitrogen-containing compound, or combinations thereof, and generating a plasma to deposit the barrier layer, wherein the barrier layer has a dielectric constant of less than 4; and

depositing a dielectric layer adjacent the barrier layer, wherein the dielectric layer has a dielectric constant less than 4.

14. (Amended) The method of claim 13, wherein the dielectric layer comprises silicon, oxygen, and carbon, has a dielectric constant of about 3 or less, and has a carbon content between about 5 and about 30 atomic percent excluding hydrogen atoms.

15. The method of claim 13, wherein the dielectric layer is deposited by oxidizing an organosiliane compound in a plasma enhanced chemical vapor deposition technique.

16. (Amended) The method of claim 13, wherein the plasma is generated under conditions comprising maintaining a substrate temperature between about 0°C and about 500°C, maintaining a chamber pressure below about 500 Torr, and applying an RF power of between about 0.03 watts/cm^2 and about 1500 watts/cm^2.

17. (Amended) The method of claim 13, wherein the barrier layer is treated with a plasma of an inert gas, a reducing gas, or combinations thereof, prior to depositing the first dielectric layer.

18. (Amended) The method of claim 13, further comprising depositing an etch stop layer on the first dielectric layer by reacting an organosilicon compound having the formula $SiH_a(CH_3)_b(C_6H_5)_c$, wherein a is 1 or 2, b is 1 or 2, and c is 1 or 2.

19. The method of claim 13, wherein the organosilicon compound comprises diphenylmethylsilane, dimethylphenylsilane, or combinations thereof.

20. (Amended) The method of claim 13, wherein oxygen-containing compound is selected from the group of oxygen, ozone, a siloxane, and combinations thereof, and the nitrogen-containing compound is selected from the group of nitrogen gas, ammonia, a silazane, and combinations thereof.

21. (Cancelled) The method of claim 20, wherein the oxygen-containing compound is selected from the group of oxygen, ozone, a siloxane, and combinations thereof.

22. (Amended) The method of claim 13, wherein the processing gas further includes a dopant component selected from the group of a boron-containing compound, a phosphorus-containing compound, and combinations thereof.

23. (Cancelled) The method of claim 22, wherein the nitrogen-containing compound is selected from the group of nitrogen gas, ammonia, a silazane, and combinations thereof.

24. The method of claim 13, wherein the processing gas further comprises an inert gas selected from the group of argon, helium, neon, xenon, or krypton, and combinations thereof.

25. The method of claim 13, wherein the barrier layer comprises less than about 15 atomic percent of oxygen.

Please add new claims 26-29 as follows:

26. (New) The method of claim 1, wherein the organosilicon compound is diphenylmethylsilane and barrier layer has a leakage current between about $3e^{-9}$ amps/cm^2 and about $4e^{-8}$ amps/cm^2 at between 1 MV/cm and 2 MV/cm.

27. (New) The method of claim 1, wherein the organosilicon compound is dimethylphenylsilane and barrier layer has a leakage current between about $1e^{-9}$ amps/cm^2 and about $2e^{-8}$ amps/cm^2 at between 1 MV/cm and 2 MV/cm.

28. (New) The method of claim 6, further comprising depositing a second dielectric layer on the etch stop layer.

29. (New) The method of claim 18, further comprising depositing a second dielectric layer on the etch stop layer.

REMARKS

This is intended as a full and complete response to the Office Action dated January 30, 2003, having a shortened statutory period for response set to expire on